

CHAPTER 12

The Three-Legged Stool June 1980–January 1981

That's a term that I coined. . . . I likened it to a stool, three legs of a stool, because . . . no leg can do it alone, nor can two legs do it by themselves.

Brig. Gen. John F. Wall¹

All things considered, after just over a year in Israel, the project was on firm ground. The major organizational elements were in place, and the Near East Project Office had a commander who could deal as an equal with the program managers. The setbacks of the spring had been overcome, and optimism seemed to be justified. Hartung reflected this view at the June press conference. He told the reporters that much progress had been made. Little of it was visible because permanent construction had just begun, but major parts of the job were complete, among them large portions of facility planning and initial design as well as some procurement. Final designs were still in progress, and the lion's share of construction to date involved camps, offices, and facilities—such as quarries, rock crushers, and concrete batch plants—with which to do the job. But the mobilization phase was over. For the next twelve to eighteen months the emphasis would be on building permanent structures. Then the project would close down. With the phases of construction overlapping, Hartung stressed the evolutionary nature of the process. “A program like this,” he said, “trying to accomplish everything on a tight time constraint, goes through several transition periods.” Overall, progress was good: “In gross terms of a program like this, where you have all of these overlaps and interfaces and concurrencies, we are right where we planned to be when we made the plan a year ago.”²

One problem was strained relations between the three principal managers. Some disagreement was inevitable because none of these assertive and articulate men willingly conceded primacy to the others. Of course, tension and conflict between the managers

was not new to the program, but the arrival of Wall, whose role in the Corps of Engineers chain of command was much clearer than Noah's had been, altered the equation. And while Wall, Hartung, and Bar-Tov talked about the three-legged stool and a common purpose, there was ample contention among them. The issues involved their different views of program goals—whether the priority should be timely completion, quality work, or economy.

The number one priority for the Corps of Engineers remained attainment of initial operating capability by 25 April 1982. On this point, if not on everything else, the engineer generals—Wall, Lewis, and Morris—agreed. In the spring of 1980 Morris had made clear to the Israelis that he saw his primary responsibility as meeting that deadline. Quality and cost were important, but the schedule was the foremost consideration. Lewis likewise asserted that “time was at the top of the priority list.”³

As Wall saw the situation, his primary goal coincided somewhat with that of the construction contractors. Their interests were best served by rapid completion so that they could collect their fees and move on to work elsewhere. He thought that the cost-plus-fixed-fee contract provided insufficient control over their expenditures beyond the personal assurances of the principal partners. Their reputations, like that of the Corps', would be enhanced by attaining all of the project goals, to be sure, but a quick finish represented the main payoff. Although Wall knew that the contractors' self-interest aligned them with his most important goal, he alerted his new staff officers to the need to monitor their actions closely.⁴

Wall understood that the other major participants did not agree with his emphasis on the schedule. Hartung's major mission involved activating two bases, rather than building them on time, so he concentrated more on turning over two high-quality airfields. Wall thought his own concern with the deadline gave Hartung this opportunity: “I worry so damn much about time . . . he can worry about quality a little bit more.” Bar-Tov's mission involved activating three bases, the two built by the Americans and a third slated for construction by the Israelis, so he stressed economy; he needed to have money available to finish his third installation. Wall understood the divergence of goals, as did Bar-Tov and his staff. Naomi Kogon described what she saw as American profligacy and its relationship to the Corps' goals: “If someone gave me the money and told me to build something as quickly as possible and gave me a limit of time, I'd say the hell with the money.”⁵

Although the Americans knew that their priorities differed from Bar-Tov's, they never understood or accepted the depth of the Israeli concern for frugality. They did know that every dollar

saved would correspondingly reduce Israel's contribution. But there remained a gap in comprehension of this issue, perhaps for two reasons. In the first place, the Corps lacked perspective on the Ministry of Defense's overall budget. From the time of the Six-Day War in 1967, Israeli defense outlays consumed ever-larger portions of government expenditures. In the mid-1980s the ministry's operating budget came to about \$6 billion a year. The 1984 sum of \$6.24 billion represented more than 31 percent of the government's budget. The amount was dwarfed by the American Department of Defense's \$300 billion annual outlay but represented a far greater portion of public resources. Given this difference in resources, the Israelis placed much more importance on marginal project dollars. The American difficulty in coming to terms with Israeli design standards may also have added to the lack of understanding. Noah thought this problem stemmed partly from resentment of the need to work to foreign standards. Whether true or not, everyone in the Corps contingent—from Wall at the top to construction managers in the field—had problems with Israeli specifications. Some, Wall among them, saw many Israeli requirements as excessive, citing the extravagance of finishing details such as plaster walls and terrazzo floors. Others agreed but thought that the Israelis deliberately over-designed structures, hoping that their own construction contractors might come close to meeting them.⁶

Wall thought Ovda and Ramon amounted to communications zone air bases in a combat zone environment. He compared them to more austere American bases and to the Sinai bases that were being replaced. As an example, he contrasted the control tower meant for one of the new bases to an Israeli-built tower in the Sinai: "There's a damn tower. . . . They ain't built one of these son-sabitches there [Eitam and Etzion] yet." After eight years in the Sinai, the Israelis still had "one of these old temporary things. . . . I submit that any air force base in the world would be happy to have one of these."⁷

The Israeli concern for frugality often translated into efforts to release contingency funds committed to the program. With the widespread optimism about completing the job for less than the program estimate, they thought they could convince the Americans to reduce the allocation for contingencies, thereby freeing the funds for use elsewhere. Soon after Wall arrived, Bar-Tov raised the issue. During Morris' visit in August, the matter also came up. He turned it aside pending better data on final cost but expressed willingness to consider the possibility in 1981. At the end of the summer Ma'ayan brought it up again. Hartung sometimes seemed will-

ing to discuss these overtures. However, with so many issues still unclear and with actual construction just under way, Wall declined.⁸

Otherwise, the differing opinions over the relative importance of project goals meant that all three had their spokesmen, although the representation was far from equal. For most of the Near East Project Office's short life, the Corps' emphasis on timely completion dominated the project. As Wall put it, restating the golden rule to reflect the reality of the project, "He who has the gold rules." This dominant position sometimes manifested itself in "an independent air," as McNeely put it. Wall conceded only a limited responsibility to the program managers in the area of "criteria and program requirements." His "command lines" went through New York City to Washington, and some thought he and his staff saw Hartung and Bar-Tov as adversaries. Whether or not this was so, the Tel Aviv staff did see itself as independent of the IBM Building. When forty-five former Near East Project Office employees later completed surveys, none of them identified the program manager as the man to whom the project reported.⁹

In assessing his own staff, Wall saw areas that needed attention. He was concerned about morale, especially in Tel Aviv where the connection between the daily routine and progress at the sites was not always clear. He also sought a more efficient working relationship between the area offices and the headquarters. Basically, he picked up the theme of teamwork, that Lewis so often stressed. He and the area engineers, Wall knew, were still "feeling our way with each other," but he expected that to work out. He wanted his staff actively assisting the area offices rather than imposing requirements and creating work. In this regard procurement was his main concern, but procurement in general was becoming his greatest interest.¹⁰

Initially, Wall expressed some disappointment in the overall quality of personnel. Here, as with his emphasis on teamwork, he shared some of Lewis' concerns. Wall sought "a sense of urgency," particularly at Ovda where contractor management seemed sluggish in the wake of the rebar episode, but he did not find it there or in most other places. Some headquarters changes, including the arrival of a new procurement officer in June, promised improvement. In the construction division the situation remained unstable for much of the summer. Carl Damico replaced Donald Baer as head in May, but Wall and the assistant chief of construction, Rudolph E. Etheridge, got involved in a dispute that lasted through the season. Etheridge thought the project's long work-week unjustified by meaningful work. Because he considered the overtime superfluous, he refused to work beyond forty hours. Wall offered him a new job as chief of construction at Ramon.



General Bratton, Chief of Engineers

Etheridge refused because that was not the position for which he came. There the situation stood until the summer, when his tour ended and he went home.¹¹

Wall also alerted the staff to the need for phasedown planning, giving notice to all of the transitional and indeed transitory nature of the project. He assigned a senior officer to coordinate the work. Colonel Wong did this initially. After he left, Wall brought Colonel Clifton from Ramon to concentrate on this area. The impetus for early attention came from Lt. Gen. Joseph K. Bratton, who replaced Morris as chief of engi-

neers in October 1980. Bratton wanted Wall out of Israel before the end of 1982. The Corps had no models for guidance in this difficult area, so Wall set up a temporary committee to assess the problem. Only with difficulty did the project staff make the mental shift needed to plan for phasedown while at the peak of construction. Colonel Griffis captured the irony of the situation: "I guess it is about time that a person start looking at that undertaking as both sites are about 10% completed." Given the problems involved in this change of emphasis, starting early was a good idea.¹²

Wall set the committee's agenda. He wanted the group to think about moving some functions to the sites but emphasized issues relating to the office in Tel Aviv. These included the number of people required, housing, office space, the post office, and the commissary. The group also examined the optional fourth year of the Management Support Associates contract, which would begin in May 1982. The committee brought together a large number of Wall's civilian and military staff officers, first chaired by Griffis and later by Wong. Members came from the personnel office, counsel, resource management, and administrative services. Thomas of the engineering division, who later became special adviser to Wall on phasedown, also participated, as did Hartung's office. Wong and George Snoddy also served on the committee.¹³

The main operational effort in the headquarters still focused on tying together design, procurement, and construction. In accordance with Wall's insistence that construction should dominate the operational aspects of the project, the construction division became the center of activity just as permanent construction became the major effort in the field. Although the project represented a "design, procure[ment], and construction arena," as Thomas put it, Leroy H. Graw, who replaced Hallmark in procurement, put the relationships in perspective: "Construction has to come first." Wall wanted to secure the ties between the three components while ensuring the growing primacy of construction, so he transferred the scheduling function from the planning and coordination office to the construction division. Hartung considered this change long overdue. A sensible approach to the sequence of work required close coordination of the schedule with the need for resources. Management of this coordination went to Damico's office, "where it belongs," according to Hartung, "and where it should have been . . . when construction started." John Blake agreed; this small and ostensibly minor adjustment ended an illogical connection. Constructors, Blake thought, should determine construction schedules. In any event, he cared little for the analysis that came from planning and coordination. As far as he was concerned, "There never was any connection between reality and what was coming out of P&C."¹⁴

The real turning point came soon afterward. In August all participants agreed on what Hartung called "the construction site-activation interface schedule" for all work items at both bases. This meant reaching agreement on the timing and sequence for delivery of facilities so the Israelis could test them and install their equipment before moving in and making the bases operational. No less important than consensus on the schedule was an agreement on commitments. This did not come easily. Soon after Wall arrived, he recognized the gap between his understanding of his job and the perceptions of the program managers. In particular, he thought that Bar-Tov saw completion objective dates for individual facilities differently than he did. Wall considered them goals toward which he and the Corps would expend "their best efforts." Bar-Tov seemed to see them as deadlines to which the Americans were committed. To clarify the situation, Wall explained these views to both program managers.¹⁵

When Wall made his point to the program managers, he first showed a draft of his letter to Hartung. Wall sometimes used this technique to make a point or get action without having to sign and send a formal letter. This time, because of the importance of the



Briefing at Ramon: Col. Paul Taylor describes construction to (left to right) Brig. Gen. John Wall, Brig. Gen. Paul Hartung, Mordechai Zippori, and Brig. Gen. Moshe Bar-Tov.

matter, the draft was not a ploy. He meant to put the issue on the table but gave Hartung the chance to consider the matter first. "Look," Wall said to Hartung early in July, "I'm going to send you this letter. Have you got any suggested changes?" Two weeks later, after Hartung indicated that he could reply, Wall sent it to the IBM Building, and the issue was on the record to be resolved.¹⁶

All three generals saw the main question as involving the nature of the responsibilities of the Near East Project Office, but their views diverged from there. Wall wanted to be held accountable only for doing the best he could. Hartung thought Wall's point moot. As he saw it, except for the crucial April 1982 deadline, the Corps could not be expected to meet rigid schedules. He also thought Wall's emphasis on his own commitments missed the key point: Bar-Tov, Hartung, and Wall shared responsibility for timely completion. Hartung agreed that the three-legged stool worked but reminded Wall that "the three legs are only needed to keep the stool on an even keel." Atop the stool sat the objective:

"The joint commitment of both DOD and MOD to share the responsibility to assure successful IOC." Bar-Tov appeared skeptical about Wall's insistence that his role was limited to "best efforts." Like Hartung, he stressed joint responsibility for the mission.¹⁷

Wall claimed that the exchange of correspondence cleared the air as well as highlighted differences. He proved to be right. By early October Wall and Hartung settled on a joint declaration of responsibilities. This was no mean feat. Between 28 September and 2 October, the statement went through eight drafts, with Wall, Hartung, and Lewis all making changes before a satisfactory version appeared. The negotiations between the Corps and the Air Force resembled discussions between sovereign governments in complexity and concern with nuance.¹⁸

As finally prepared, the statement entitled "Construction-Site Activation Interface Date" had two noteworthy features. In line with Hartung's emphasis on the collective nature of program responsibility, it acknowledged the commitment of "all members of the Program" to completing the mission. The agreement also deleted all use of the phrase "best efforts," although Wall continued to use it in other references to his role. Instead, the statement spoke of the dedication of all "to meet or better the construction-site activation interface dates to provide the IAF initial operational capability." The Corps and its contractors would "manage construction to target dates which are essentially interface dates less two months or more of contingency time." Where a target date appeared unattainable, "the Program Managers and the Project Manager jointly" would decide on changing the date, arrange a workable joint occupancy, or seek other solutions. All in all, the statement reaffirmed the mutual commitment to the recently established schedule.¹⁹

Agreement on the schedule made it possible to deal with the long-standing need for a management information system. Both construction contracts required information systems that tracked progress and expenditures. Bory Steinberg of the planning and coordination office had wanted a system that would provide data "upon which to make a decision and to find out whether there are any problems and where to focus their attention." Very early, the Corps had decided to use extant contractor systems rather than require a single new one. This decision saved some time and money, but problems appeared when it became clear that the contractor systems were inappropriate. Also, there were just too many things to do at the beginning—ordering equipment, producing drawings, providing life support, and setting up a working relationship with the Israelis. "You can't do everything at once," Gilkey said, although fast-track construction demanded virtually

that. "We were so busy trying to get things organized, get things moving, get other major problems solved," he noted, "that I think we went for a period of two or three months at the very beginning of the project without paying enough attention to the early development of these programs."²⁰

The magnitude of the problem became clear to Gilkey in September 1979. Soon afterward, Hartung began complaining about the lack of realistic and usable management data. There were grounds for concern, especially in the mobilization phase of the program. "A hell of a lot of bucks were being spent up front without any work going into the ground," Steinberg recalled, "and people were nervous." This was Hartung's point. In November 1979 he noted that outlays exceeded \$57 million and obligations totaled over \$190 million. "Your three contractors," he told Gilkey, "could provide a more reasonable and accurate assessment of where they've been, where they are, and where they are planning to be in the near future." But the basis for measuring the resources and time needed to complete structures was lacking for many months. The project had no way to predict productivity for its Thai and Portuguese workers. Moreover, until almost the end of 1979, when the construction contractors agreed to accept the government estimate for the cost of the work, final estimates of costs, labor, and schedule were not really possible. Despite the impediments to full and useful program reporting, Hartung and Bar-Tov pressured Gilkey for better reports. Meanwhile, the area offices pushed him the other way. "The time has come," O'Shei told Gilkey in May 1980, "to take a hard look at the whole MIS with a view toward reducing, not expanding, the flow of detailed information that, in my opinion, serves more to occupy the staff than provide operators with appropriate project and program level management data."²¹

At the same time, Wall arrived and started an all-out effort to rectify the situation. He called the management information system "my number one problem." Avoiding arguments about whether O'Shei or Hartung might be right, he had more basic concerns. "That's a problem," he said of the system, "because Mrs. Chayes, Under Secretary of the Air Force, thought it was a problem." As Steinberg put it, a main job of the system was to assure those interested in the program that progress was satisfactory: "to give them a warm-fuzzy that we were on schedule and within budget." And there was no question about Chayes' concern about the quality of the reporting system and the questions raised by the project office's ability to develop effective and timely schedules and cost estimates.²²

This drive itself may not have been possible without other critical and closely related actions during the summer of 1980, no-

tably the establishment of meaningful schedules for turnover of facilities and the decision to increase the number of workers. Without timetables and the data on worker productivity that had been accumulated, as Steinberg said, "You couldn't pin down the exact size and skills of the work force needed."²³ Even with this information in hand, his office had to track between the bases to make sure they reported the same categories. With a number of major issues to be covered in the reports—bed down schedule, best efforts versus commitments, cost tracking and control, ties between design and procurement, and credible upward reporting—the project either had to develop its own system or accept the contractors' figures.

The program adopted the latter choice and worked from there. Both Hartung and Wall expected in August 1980 that a usable system would be available the following month. Usable did not mean perfect. Data from the two systems had to be correlated manually, "with green eye shades and stubby pencils." In effect, the manual compilation of data from the two automated but different contractor systems became a third system. The report that emerged in September appeared coincidentally with the transition from mobilization to permanent construction. All of the necessary experience factors and schedules were in hand. Moreover, with permanent construction becoming the dominant part of the job, there was something more substantial than spending to report. Hartung appeared satisfied that the reports generated by this process met his needs. One report per base gave information on scheduling and progress that was no more than ten days old. Information on expenditures was reported one month behind the data on progress and schedule.²⁴

Hartung still thought the system was poorly conceived. He felt that the reporting should have been a program responsibility or at least a construction agent responsibility, perhaps carried out by Management Support Associates. The effort to combine two different accounting systems, which were both geared to managing construction rather than a program, yielded a product that was not useful for making comparisons between the bases, for analyzing program costs involving the Department of Defense and Management Support Associates in Tel Aviv, or for tracking site activation.²⁵

Meanwhile, efforts to tie construction more closely to design and procurement went on. Their relationship was clear to all as the emphasis continued to shift toward construction. During the summer of 1980 Thomas recognized that design was still incomplete and that partial design allowed for only partial procurement. He hoped to finish design by February 1981, while Wall goaded

the procurement office into action. The problems inherent in concurrent design and procurement, combined with the knowledge that delays in procurement would slow construction, meant that all three would have ample chance to work together.²⁶

Some aspects of this coordination went more easily than others. Damico in construction and Thomas of engineering had worked together at Cape Canaveral, on the antiballistic missile program, and in Saudi Arabia. Graw in procurement was a stranger to the Corps of Engineers but had impressive credentials. A 1964 graduate of the U.S. Military Academy and a veteran of six years on active duty, he had remained in the Army Reserves after his resignation in 1970. So he was well acquainted with the Army. He also had a doctorate in education from the University of Southern California and ample experience in government procurement, most recently with the Defense Logistics Agency. He should have fit well but did not. Like Management Support Associates, which had tried to reorganize procurement in the previous year, Graw was an outsider. Damico and Thomas, veterans of the Corps old-boy network, ran the divisions between which he was supposed to provide the bridge. Graw himself sometimes appeared to alienate his coworkers—Wall considered him “a little overbearing at times”—and was never fully accepted. Nevertheless, no one questioned his ability. Bar-Tov, who generally thought poorly of American management, called Graw “one of the pros in this program.”²⁷

When Graw arrived in June, the last issues of the procurement guidance series started by Raymond Aldridge were coming out, and there was a procurement logjam. “There were,” Graw said, “still things that were being done [just] before I arrived that should have been done . . . nine or twelve months before.” The systems created by Aldridge and Roy Edwards represented a positive but relatively untested step. Basically, the project was propelled along on the basis of procedures with which Graw took issue. He found the situation “very difficult professionally, coming in at that point in time after the program had operated under those procedures and attempting to change them.” As Graw saw the situation, the emphasis on the schedule took its toll in terms of quality and cost. He saw unnecessary haste and indifference to cost analyses prior to purchases. Virtually everyone involved with the program would have agreed to a degree with Graw’s impression. In the summer of 1980 problems with the procurement operation generally were considered those most in need of resolution.²⁸ However, consensus on the exact nature of the difficulty or its cause was lacking.

From the construction division’s point of view, the problem was twofold. On one hand, compiling information on needed materials

was a time-consuming process that depended on timely completion of facility design. Enough materials for construction never seemed to be on hand. The sites also complained of equipment shortages. Butler at Ramon said that nothing came on site quickly enough. The chief auditor, Michael Maloney, had a somewhat different view. He thought too much of the purchasing was carried out on an emergency basis because of inadequate planning. He attributed the problem to the lack of familiarity among government and contractor personnel with the acquisition processes for a project on such a tight schedule. Graw felt that he absorbed the blame for someone else's problem; bills of materials were the engineering division's business. If design was not completed promptly, neither was purchasing, so the engineering division made its presence felt in the establishment of priorities. Moreover, all other things being equal, the contractor, particularly at Ramon, tended to choose the fastest delivery over the lowest price.²⁹

At the area offices some agreed at least partly with this assessment. Assistant Area Engineer Peterson at Ramon thought that the emphasis on procurement during the spring of 1980 had been misplaced. He felt that procurement was the next step after design, where more attention should have been invested. Colonel Kelly at Ovda also cited delays in completing design packages. Griffis, who ran the planning and coordination office on Wall's staff until replacing Colonel Taylor as head of the Ramon Area Office in the summer of 1981, agreed that "the procurement problems are engineering problems and not procurement expert problems." So, Graw was not alone in arguing that the slow procurement stemmed from difficulties in the design process. He also believed that the excessive cost of some purchases derived from the lack of cost analysis.³⁰

There was no disagreement about the inextricable relationship among design, procurement, and construction. The three were indeed interrelated, and the evolution of design determined the pace at which materials could be bought. In fact, the approval system in the Near East Project Office included simultaneous authorizations for site adaptation and procurement. Bulk materials were purchased when the layout and general design were approved, and increased releases for purchase were based on more detailed drawings. Graw saw the issue as the amount of influence that the other two activities exerted over purchasing. So while views of the specific nature of the relationship varied, everyone understood the close tie.³¹

Graw's solution had a familiar ring. He thought procurement should not have been split and located in the desert. The design organization, on which so much of the procurement work depended, was centralized in Tel Aviv. Moreover, such procurement

talent as existed within the project was spread thinly through the government and contractor organizations and could have been better used in a single office. With the program so far along that consolidation was not realistically possible, Graw called for better communication between the sites so the separate procurement operations could share their experiences. Another incentive to centralization was the fact that the construction contractors followed divergent approaches to purchasing. Negev Airbase Constructors developed a consolidated procurement plan. With a larger professional staff on board earlier than that at Ramon and a fresh infusion of management after the reinforcing steel issue was resolved, the Ovda contractor got off to a faster start with its office engineering and procurement. Kelly thought developing a consolidated procurement plan was "the most fantastic thing they could have done." Air Base Constructors on the other hand bought materials by individual facility, so they took longer and did not catch up with Ovda until the middle of 1981. In addition to producing results at different paces, the two approaches produced different reports and tended to confuse vendors.³²

With the project so far along, Wall did not try to reorganize the system. Instead he gave procurement command attention, designating as his most urgent priority the completion of 90 percent of purchases by January 1981. Later, when he was able to reflect on the matter, he did recommend centralized procurement on subsequent projects. He and Graw both knew that the completion of exactly nine-tenths of all purchases by the first of the year—Wall's "management challenge number one"—was unimportant. In the summer of 1980 Wall did not expect that the goal would be met and was even unsure that it was important to do so. Considering the construction schedule, he would have settled for 90 percent by February or March. Basically, he wanted to goad the procurement organization into action. As Hartung said, Wall's "ninety percent was an arbitrary thing, but it created a catalyst to put people to work."³³

And it did work. Neither area office hit exactly 90 percent, but both came close. They completed the lion's share of their purchasing, albeit with some panic buying in December, as Wall knew. He expected to "have problems with procurement until we get all procured items on board and we get them imbedded in the buildings." Still the major surge in activity was over at the start of 1981. Kelly thought Wall's emphasis on this area helped immensely: "It did more for this program than anything else."³⁴

There was more to the procurement problem in the summer of 1980 than the need to accelerate the pace. Relations between the office in Tel Aviv and the procurement branches in the area of-

fices were abysmal. August and September 1980 were especially bad. Ovda accused Graw of "extra-legal suggestions." Ramon hinted that it would send Graw the data he wanted only if its use was apparent to the area office and claimed that his instructions confused the vendors. Graw contributed a lecture on "the Federal norm" in procurement. Clearly relations between Graw's office and the sites transcended the usual vertical tension between superior and subordinate headquarters. As Wall said in August, "If I had to pick the worst area of cooperation it would probably be procurement right now." Graw thought part of the problem was organizational: procurement people on the sites worked for their respective area engineers and did not take well to directions from Tel Aviv. Among the consequences of this arrangement that he found frustrating was lack of control over hiring for purchasing jobs at the sites. Coupled with the different contractor approaches to procurement, the independence of the area offices made implementing uniform policy and procedures difficult. Even coordinating the two sites to obtain discounts through larger purchases sometimes proved impossible.³⁵

The area offices did not hesitate to tell the Near East Project Office that it was a large part of the procurement problem. In April Curl had "repeatedly asked" Noah to cancel the weekly procurement meetings that Curl considered a waste of his time. Graw's arrival did nothing to lessen the hostility. Six weeks after he arrived, he asked Ramon and Ovda for lists of their top five problems. Each put Graw's office on its list. Ovda's complaints included complicated program procedures that confused and lengthened the procurement cycle. Ramon cited Tel Aviv in two of its five trouble areas: for confusing guidance and excessive requests for information.³⁶

Even in the summer of 1980, when Wall could not be sure that the procurement system would respond as well as it did to his challenge, he looked at another major area of concern. Changes in the Israeli economy, particularly in the construction sector where unemployment was high and equipment stood idle, had brought requests for more opportunities for Israeli workers and vendors. At the June press conference Hartung described efforts to expand Israeli involvement. The program was doing its best to buy materials in the country and had made commitments to spend more than \$50 million. Expenditures would go even higher, Hartung told reporters. The program also absorbed some unemployed construction workers. During the previous winter Ramon had been authorized to hire 200 Israelis from nearby towns, but so far only 90 had taken jobs. The considerations that

determined the level of involvement of Israeli vendors or workers had little to do with the needs of the program. Decisions, as general manager Davis at Ovda noted, were based on politics rather than engineering, and some Americans were more sensitive to the situation than others. Hartung usually seemed more willing to accommodate the Israelis than did the Near East Project Office, although the Corps also took steps to integrate Israeli goods and services. In December 1979 Gilkey had made a presentation to the Israeli Association of Manufacturers on project procurement. More than two hundred business representatives attended. In July 1980, as cooperation grew, Graw assigned Leonard Beder of his staff to work more closely with Bar-Tov's office in improving relations with Israeli firms.³⁷

The expanded effort in 1980 involved numerous meetings at which Graw or others from the project explained the U.S. government's way of doing business and the needs of the program. As attorney John Brown noted, "The moment we realized they didn't understand us, we set out to teach them." Although Wall recognized the necessity of the discussions, he was not pleased. "Meetings are bad," he contended, "because they take people away from the job of building air bases." Nevertheless, a dramatic increase in the amount of money spent in Israel ensued. The total value rose from about \$8.5 million through December 1979 to over \$36 million by the end of June 1980.³⁸

As the Americans adjusted to more Israeli participation, the problem became that of keeping the Israelis from disrupting the procurement system. Part of the difficulty came from their different approach to business. Israeli standards for materials were no lower than American specifications, but their procedures tended to be less formal than the more explicit and rigid procedures in federal regulations. Wall saw an inclination among the Israelis to bargain after a contract was signed. This tendency, he said, caused "a lot of consternation." He responded by trying to withhold price information from Bar-Tov's office. He was willing to discuss technical and contractual aspects of bids but insisted that the award go to the lowest bidder who met those requirements. "This caused the Israelis a hell of a lot of problems," he said; they wanted to "see what the technical package looked like in relation to its price" so they could negotiate prices on that basis. Their approach, unconventional and at times even incomprehensible by American standards, led to some peculiar situations. In September 1980 Ramon let a contract for electrical supplies with an Israeli vendor, who later withdrew his bid. This change came at the request of the Ministry of Defense, which wanted the next lowest bidder to get the award.

"This is a case," the area office complained, "of MOD and the vendors working it all out and presenting ABC with either a *fait accompli* or collusion or both." Innovators with little patience for routine, the Israelis showed no more respect for a chain of command than for procedures. Bar-Tov's office went directly to the constructors with procurement directions, bypassing Wall's staff and the area office. The area office at Ramon objected strenuously. Taylor told Butler that only the area office was authorized to issue guidance to the contractor organization.³⁹

The Israelis never left any doubt that they were paying close attention to procurement transactions. Bar-Tov wanted both program managers to give full attention to the procurement activities of the contractors. He and his advisers protested the number of emergency procurement actions, which they claimed gave Israeli firms insufficient time to respond. Bar-Tov also complained that the same companies repeatedly won contracts by small margins. Although he had no proof of foul play, he stayed concerned about fraud. As Kogon recalled, he wanted "to see the first guy in jail."⁴⁰

The Israeli concern may have been legitimate, but it was distracting. Hartung tried to minimize Bar-Tov's involvement, reminding him that it was unwise to tie up the contractors and area offices with questions. Bar-Tov persisted, insisting that management in Tel Aviv should help the contractors spot possible errors. Keeping Bar-Tov's office out of the process was difficult if not impossible. Moreover, doing so would have been counterproductive. The staff helped with the maze that was Israeli customs. In addition, the contractors used the help of the Ministry of Defense in conducting preaward surveys and price analyses and later in expediting deliveries from Israeli suppliers. In fact, the help from Bar-Tov's office in these areas was sufficiently important that it was the subject of the first substantive procurement guidance document. Bar-Tov himself almost became the point of contact between the project office and Israeli businesses, adding significantly to his already heavy work load and to the crowded agendas of the program management meetings.⁴¹

Although creation of expanded opportunities for Israeli businesses and workers did not derive from the needs of the program itself, it still worked to the program's advantage. Israeli workers never made a significant impact because of the small number employed. On the other hand, purchases of Israeli goods proved beneficial. Whether made in the United States, as they frequently were, or in Israel, their quality was high, and transportation costs were low.⁴²

By the end of the summer of 1980 the procurement structure and the needs that it filled had evolved considerably. Still, Wall had

no illusions about the future. He expected that problems would not disappear but only change. He was concerned about excessive purchases and control of the inventory that he would have to turn over to the Israelis at project's end. Maloney was even less sanguine, claiming that from a systems point of view, little had changed. In fact, as time grew shorter, individual purchases became even more rushed and disorganized.⁴³ Yet, dramatic improvements had taken place. The procurement specialists from Huntsville had given structure to the program; Wall and Graw had given it effective management. At the same time, the project had reached an equilibrium with the Israelis that balanced their desire for greater participation against the American need to work within their system.

Despite the attention paid to procurement during the second half of 1980, design also received command interest. After all, design set the pace for work. Completion of purchases and development of definitive construction schedules awaited the end of this phase. Thomas considered the job big, rather than difficult, except for the hardened facilities, which required substantial attention. All in all, during the summer of 1980, he saw the task in terms of "this school of minnows swimming around." There were indeed a great number of minnows. Each base required about 5,500 drawings, which were issued an average of three times. The pace of design quickened during the spring and summer, and Air Base Constructors' design organization went on an eighty-hour workweek in May. Israeli firms still produced incomplete or partial plans, which the contractors coordinated and consolidated for procurement and construction.⁴⁴

As production increased, the need to limit and control changes of completed drawings became clear. Virtually all major construction jobs, whether fast track or fixed price, faced this problem. Evolving project needs, new technology, and design flaws caused by errors or omissions necessitated reevaluation and alteration of drawings. Corps projects were no exception. However, in less developed but richer nations than Israel, the issue was not as troublesome. In Saudi Arabia, where for many years competence was limited while funds were not, changes were easily accepted and incorporated in plans.⁴⁵

Hartung, who raised the issue with Bar-Tov in March, was concerned about changes finding their way into designs and master plans without going through the approval process for engineering change proposals. Each adjustment might be warranted, but impromptu changes in the field left management out of the decision-making process. Besides, a large number of changes, however small each one might be, threatened to affect the schedule and

cost of the project. Discussions of control of these changes revealed differing viewpoints between the program managers. In principle, the configuration control board set up during Noah's tenure managed the processing and implementation of design changes. The existence of a procedure, however, brought no assurance that it would be followed, and Hartung complained that changes slipped into designs and master plans unbeknownst to management. He feared that an accumulation of changes, however justified and minor they might be individually, would collectively harm the project. Bar-Tov's view differed somewhat. He encouraged adherence to the rules, but only to a degree. Procedures, he insisted, were meant to help do the job and should be followed only to the extent that they did so. The Israeli armed forces had earned a reputation for improvisation, and he sought to keep his freedom of action. "As professional managers," he said, "we are responsible for using judgment in applying rules; don't be dead right in applying the ECP process."⁴⁶

The Israeli penchant for improvisation became clearer as the number of change proposals mounted. All told, the alterations came from a variety of sources, the program management offices, the Corps of Engineers, the three contractors, and the Air Force regional civil engineer. Bar-Tov's office consistently produced more than any of the other six sources. Four hundred of the 907 that were processed and approved came from the Ministry of Defense. During June through October 1980 the number of changes, particularly those from Bar-Tov's office, peaked. They became the focus of attention by Wall's office and the sites and caused tension among the three principal managers. Wall, who disliked the procedure for managing the changes because it "gave ultimate ECP approval authority to DOD PM," found the long meetings over the issue frustrating. During one discussion, he wrote "Build it!!!" in his notebook while listening to the arguments. Damico, perhaps echoing the feelings of construction people everywhere, also considered the changes very disruptive (*Tables 2 and 3*).⁴⁷

In August the program managers acted to limit the number of proposals. Thomas, who complained about trivial changes by the Ministry of Defense, urged that changes be limited to those that fixed so-called fatal errors—design flaws that had to be corrected before construction began. Changes in shelter design already had caused alteration of more than one hundred drawings. Bar-Tov and Hartung agreed to this standard for plans already in the approval process. Thomas was to provide all agencies with a design schedule so they could consider the status of specific plans before suggesting changes.⁴⁸

TABLE 2—ENGINEERING CHANGE PROPOSALS (ECPs)
BY MONTH AND ORIGINATOR
(Aircraft Shelter ECPs in Parentheses)

| Month | ECPs | DOD | MOD | COE | AFRCE | ABC | NAC | MSA | UNK |
|-------------|--------|------|--------|--------|-------|-------|-------|------|-----|
| Dec 79 ... | 2 | | | 2 | | | | | |
| Jan 80.... | 5 | | | 3 | | 2 | | | |
| Feb 80 ... | 34(4) | 6 | 22(4) | 4 | | 1 | | 1 | |
| Mar 80 ... | 40(16) | 4 | 12(1) | 19(10) | | 2(1) | 3(4) | | |
| Apr 80 ... | 44(18) | 1 | 21(7) | 5(2) | | 5(4) | 11(5) | 1 | |
| May 80 ... | 48(11) | 1(1) | 22(4) | 12(3) | | 4 | 7(3) | 1 | 1 |
| Jun 80.... | 61(25) | | 30(11) | 10(6) | | 7(3) | 14(5) | | |
| Jul 80 | 80(22) | 3(1) | 37(10) | 16(4) | | 6(2) | 12(5) | 6 | |
| Aug 80 ... | 86(29) | 2(2) | 41(12) | 14(4) | | 18(7) | 9(4) | 2 | |
| Sep 80 ... | 80(21) | 2(2) | 20(8) | 14(4) | 1(1) | 23(3) | 19(3) | 1 | |
| Oct 80 ... | 66(12) | 1 | 17(5) | 22(1) | 4(1) | 9(4) | 13(1) | | |
| Nov 80 ... | 38(6) | 2 | 21(6) | 8 | 1 | 1 | 5 | | |
| Dec 80 ... | 33(6) | 1 | 22(5) | 8(1) | | 1 | 1 | | |
| Jan 81.... | 30(1) | 1(1) | 13 | 7 | 1 | 4 | 2 | 2 | |
| Feb 81 ... | 33(6) | 1 | 17(3) | 10(2) | | 3 | | 2(1) | |
| Mar 81 ... | 48(5) | | 25(3) | 13 | 1(1) | 4(1) | 5 | | |
| Apr 81 ... | 37(5) | 4(1) | 17(3) | 9(1) | | 6 | 1 | | |
| May 81 ... | 32(8) | 6 | 16(6) | 8(2) | | 2 | | | |
| Jun 81 ... | 18 | 1 | 9 | 8 | | | | | |
| Jul 81 | 22(2) | 3 | 10(1) | 8(1) | | | 1 | | |
| Aug 81 ... | 9 | | 5 | 4 | | | | | |
| Sep 81 ... | 10(3) | 3(1) | 4(1) | 2(1) | | 1 | | | |
| Oct 81 ... | 11 | | 8 | 2 | | | | 1 | |
| Nov 81 .. | 10 | 1 | 4 | 5 | | | | | |
| Dec 81 ... | 7(1) | | 4(1) | 2 | | 1 | | | |
| Jan 82.... | 16(1) | 5 | 3(1) | 3 | | 2 | 3 | | |
| Feb 82 ... | 2 | | | 2 | | | | | |
| Mar 82 ... | 5 | 1 | | 2 | | 2 | | | |

Source: NEPO Engineering Division, ECP Log, IABP files, WNRC, Accession 77-83-1025, Box 4.

TABLE 3—TOTAL ENGINEERING CHANGE PROPOSALS
(Aircraft Shelter ECPs in Parentheses)

| Agency | December 1979–March 1982 | June–October 1980 |
|-------------|--------------------------|-------------------|
| DOD | 49 (9) | 8 (5) |
| MOD | 400 (92) | 145 (46) |
| COE | 222 (42) | 76 (19) |
| AFRCE | 8 (3) | 5 (2) |
| ABC | 104 (25) | 63 (19) |
| NAC | 106 (30) | 67 (18) |
| MSA | 17 (1) | 9 |
| Total | 906 (202) | 373 (109) |

Source: NEPO Engineering Division, ECP Log, IABP files, WNRC, Accession 77-83-1025, Box 4.

Wall took over from there. He told the area offices to "take a very hard line on ECPs." Then he spelled out this position. The problem had reached a point where "even minor changes may have a serious impact on the program." Like Hartung, he was concerned that "a proliferation of seemingly insignificant and unimportant changes will build up to have a significant impact." He wanted the area offices to assess each proposal they received, inform Wall's representative on the configuration control board of the cost of each, and state their positions regarding acceptance.⁴⁹

While Wall tried to control the growing number of change proposals, the issues they generated remained only partly resolved. Bar-Tov complained that the contractors made unauthorized changes while adapting building designs to the sites, introducing alterations that might themselves contain fatal errors or create delays. Thomas thought that the Israelis rather than the contractors were inclined to make impromptu changes in plans. Wall agreed, although he cared little about where the tinkering came from: "We do not intend to accept changes from any source except approved ECPs while designs are in progress."⁵⁰

Well into the fall, the matter of change proposals created tension between the program managers. Over the summer positions had remained unchanged. For the Israelis, Ma'ayan contended that management of changes was the program's main problem. He understood the reluctance of the Americans to consider desirable but unnecessary changes. However, he thought that Bar-Tov should decide which ones were in fact needed. Hartung disagreed. He claimed that discriminating between changes that were required and those that were not was a subjective exercise. Bar-Tov later agreed with this point but otherwise held to his former position. Hartung also remained adamant: he wanted the changes stopped because they cost money and slowed progress. If the job could be done first and the change made later, Hartung wanted it that way.⁵¹

At stake was more than competing viewpoints on change proposals. The issues were program control and the philosophy governing construction. If the Israelis prevailed, they would improvise and experiment all the way to April 1982. If the Americans kept control, they would adhere to the design plans and their system of project management. While the program managers argued, the Corps of Engineers grew more concerned. In Washington Deputy Chief of Engineers Wray knew that Hartung was doing his best to control changes but was troubled by the lack of progress. Wall's boss in the Directorate of Military Programs, Drake Wilson, added that the large volume of changes was causing a decline of confi-

dence in the Corps' ability to meet the schedule. Like Hartung, he believed it would cost less to correct mistakes later.⁵²

Meanwhile, Wall became even more frustrated. Because of a dispute over a detail in a shop drawing, the Israelis at Ramon halted a concrete pour at the radio transmitter building. The delay kept the contractor from meeting his scheduled completion date. Wall thought this was no way to build an air base. The facility should have been built as designed or taken off the list of facilities needed for initial operating capability. If the design error was indeed fatal, all concerned should have walked away from it, analyzed the problem, and rescheduled construction.⁵³

Although the discussions persisted until late autumn and flared anew in later months, by December the program reached an equilibrium if not a consensus. The number of change proposals declined from an average of 70 per month from June to October to 33 in December and 30 in January. In part, the issue was taking care of itself: as design became more complete, fewer changes were proposed. At the same time, the area offices helped reduce the number of changes and the amount of effort expended in Tel Aviv by approving and issuing minor changes (those not affecting design or the scope of work) as "Information Reports" in the field. Changes with broad effects still went to the program managers, but Hartung remained determined to limit changes and the ensuing disruptions.⁵⁴

As the issue declined in importance, the pendulum continued to swing toward the construction division. In February 1981 Damico took over approval of change proposals. At the same time, much but not all project design was completed. Problems inherent in the Israeli approach to this phase persisted, and incomplete drawings complicated procurement for some time. Graw noted that a great deal remained to be done, that even in the fall of 1981, many months after design was nominally finished, drawings for electrical panel boards for Ramon were yet to be done. "This stuff," he said, "about 100 percent of the design being completed in January of 1981 is all bull shit." Still, 1981 started with procurement nearly 90 percent complete and design also close to being done. The prime activity for the new year would be construction.⁵⁵

Notes

1. Wall interview, Aug 80.
2. Proceedings of Press Conference, 12 Jun 80.
3. MFR, Wray, 30 Apr 80, sub: Meeting with Israeli Officials on Air Base Construction, IABPC, 1/2; Lewis interview, Jan–Feb 82, part 1; Morris interview.
4. Wall, Briefing for Incoming Officers, 14 Jun 81.
5. Ibid.; N. Steinberg interview.
6. Lucinda Franks, "Israel After Lebanon," *New York Times Magazine* (25 March 1984): 66; Drew Middleton, "Israel's Defense: As Good As Ever?" *New York Times Magazine* (19 May 1985): 63; Schiff, *The Israeli Army*, p. 189; Wall interview, Aug 80.
7. Noah interview; Wall interview, Aug 80, May 81, Oct 81, and May 82; Grafa interview; Parkes interview, May 81; Interv, author with Edgar N. Moon, Oct 81, Ovda, Israel.
8. Lewis, Notes on Telephone Conversation of 11 Aug. 1980 with Morris; Wall, Project Notebooks, vol. I, 22 Jun 80, and vol. III, 24 Sep 80, IABPC, 90.
9. Wall, Briefing for Incoming Officers, 14 Jun 81; McNeely interview, Mar 84; Proceedings of Press Conference, 12 Jun 80; USACE CERL, *Project Manager's Handbook for Special Projects*, Technical Rpt P-85/01, p. 58.
10. Wall interview, Aug 80; Wall, Project Notebooks, vol. I, 21 Jun 80, and vol. II, 18 Jul 80, IABPC, 90.
11. Wall interview, Aug 80; Wall, Project Notebooks, vol. I, 24 May 80, IABPC, 90; DF, R. E. Etheridge, Assistant Chief, Construction Division, to Project Manager, 17 Aug 80, sub: Work Schedule of the Undersigned, with comments 2, 3, and 4, IABPC, 3/6.
12. Wall interview, May 81; Chapla interview, Apr 81; Griffis, Daily Journal, P&C Office, Jul 80–Apr 81, 14 Aug 80, IABPC, 41/1.
13. DF, Gilkey to DOD PM and Committee Members, 14 Aug 80, sub: Project Phasedown, IABPC, 33/2; Sales interview, Apr 81.
14. Graw interview, Oct 81; Thomas interview, Aug 80; Blake interview; Hartung interview, Apr 81.
15. Hartung interview, Apr 81; Ltr, Wall to Hartung, 1 Sep 80, sub: Construction Site Activation Interface—Ramon, IABPC, 86/1; Wall, Project Notebooks, vol. V, 31 Mar and 8 May 81, IABPC, 90; Wall interview, Aug 80.
16. Wall interview, Aug 80; Wall, Briefing for Incoming Officers, 14 Jun 81.
17. Ltr, Wall to Hartung, 20 Jul 80, sub: Commitment Versus "Best Effort" in Meeting IAF Bed Down Dates, IABPC, 33/2; Ltr, Hartung to Wall, 29 Jul 80, sub: Construction-Site Activation Interface Scheduling, IABPC, 86/2; Bar-Tov interview, Oct 81. The Balfour Declaration of 1916, Great Britain's pledge to work toward creation of a Jewish homeland in Palestine, centered on a phrase similar to Wall's "best efforts." The declaration said in part: "His Majesty's Government view with favour the establishment in Palestine of a national home for the Jewish people, and will use their *best endeavors* [emphasis added] to facilitate the achievement of this objective." Quote from Kurzman, *Ben-Gurion*, p. 121.
18. Ltr, Wall to Hartung, 1 Sep 80, sub: Construction Site Activation Interface; MFR, Alan Shepherd, 2 Oct 80, sub: Construction Site Activation Interface Date Position Statement Audit Trail. Both in IABPC, 86/2.
19. Construction-Site Activation Interface Date, Encl to Ltr, Wall to Wray, 2 Oct 80, sub: Construction Site Interface Schedule, IABPC, 86/2; Wall, Briefing for Incoming Officers, 14 Jun 81.

20. Interv, author with Bory Steinberg, Feb 85, Washington, D.C.; Lewis interview, Jan–Feb 82, part 3; Gilkey interview; *ENR* (22 April 1982): 75.

21. B. Steinberg interview; Ltr, Hartung to Gilkey, 18 Nov 79, sub: Program Report–October 1979, IABPC, 9/7; Gilkey interview; Hartung interview, Apr 81; Lewis interview, Jan–Feb 82, part 3. Ltrs, Bar-Tov to Hartung, 28 Feb 80, sub: The Program Reports; Hartung to Noah, 7 Mar 80, sub: Program Reports; Gilkey to Hartung, 13 Mar 80, sub: Program Reports; Hartung to Gilkey, 17 Mar 80, sub: Program Reports; in IABPC, 9/7. Ltr, O'Shei to Gilkey, 21 May 80, sub: Request for Scheduling Data, IABPC, 33/1.

22. Wall interview, Aug 80; B. Steinberg interview; NEPO Sitrep No. 40, 5 Jun 80, IABPC, 14/5.

23. B. Steinberg interview.

24. Wall interview, Aug 80; Hartung interview, Aug 80 and Apr 81; Interv, author with Robert I. Barry, Aug 80, Tel Aviv, Israel; B. Steinberg interview.

25. Hartung interview, May 82.

26. Taylor interview; Thomas interview, Aug 80.

27. Damico interview, Aug 80; Graw interview, Oct 81; Association of Graduates, United States Military Academy, *Register of Graduates and Former Cadets, 1802–1984* (Association of Graduates, 1984), p. 684; Wall interview, May 81; OAO, Master Diary, vol. IV, 20 Feb 81, IABPC, 85/1; Bar-Tov interview, May 82.

28. DF, Leonard Beder, Acting Chief, P&S, to Deputy Project Manager, 3 Jun 80, sub: Input for Project Manager's Letter to the Chief of Engineers, IABPC, 33/1; Chapla interview, Aug 80; Graw interview, Apr and Oct 81.

29. Wall interview, Aug 80; Blake interview; Butler interview; Maloney interview, Aug 80; Graw interview, Apr and Oct 81.

30. Graw interview, Apr and Oct 81; Peterson interview, May 81; Kelly interview, May 81; Griffis, P&C Journal, 3 Sep 80, IABPC, 41/1.

31. Hartung interview, May 81; Thomas interview, Aug 80; Maloney interview, May 81.

32. Hartung interview, Apr 81; Graw interview, Apr and Oct 81; Peterson interview, Oct 81; Kelly interview, May 81.

33. USACE, *The Israeli Airbase Program: Lessons Learned*, Engineer Pamphlet 5–1–5 (Washington, D.C.: OCE, Sep 82), p. 20; Wall interview, Aug 80; Graw interview, Oct 81; Hartung interview, Apr 81.

34. Wall interview, May 81; Wall, Project Notebooks, vol. IV, 10 Dec 80, IABPC, 90; Kelly interview, May 81.

35. Telexes, Ovda P&S to NEPO P&S, 5 Aug 80, sub: Procurement Data Requirements and Procedures; Ramon P&S to NEPO P&S, 18 Aug 80, sub: Procurement Data Requirement; Ramon P&S to NEPO P&S, 29 Aug 80, sub: Data Requests; Ramon P&S to NEPO P&S, 21 and 29 Aug 80, sub: Aircraft Towing Winches; NEPO P&S to Ramon P&S, 21 Aug 80, sub: Aircraft Towing Winches. All in IABPC, 33/2. Ltr, Wall to Area Engineers, 7 Sep 80, sub: Adherence to the Defense Acquisition Regulation (DAR), IABPC, 33/3; Wall interview, Aug 80; Graw interview, Apr and Oct 81; MFR, Wharry, 17 Dec 80, sub: Trip Report—Israel Air Bases Construction Project.

36. OAO, Master Diary, vol. II, 29 Apr 80, IABPC, 84/4. Telex, OAO P&S to NEPO P&S, 1 Aug 80, sub: Procurement Data Requirements; Telex, RAO P&S to NEPO P&S, 2 Aug 80, sub: Procurement Data Requirements. Both in IABPC, 33/2.

37. Proceedings of Press Conference, 12 Jun 80; Davis interview; Lewis interview, Jan–Feb 82, part 1; NEPO Sitrep No. 24, 6 Jan 80, IABPC, 13/9; DF, Graw to Gilkey, 3 Jul 80, sub: Input for Letter to the Chief of Engineers, IABPC, 33/2.

38. Brown interview, Aug 80; Wall interview, Aug 80; Memo, Wall through DOD PM for MOD PM, 27 Jul 80, sub: Quarterly Report for Central Bureau of Statistics, IABPC, 18/6.

39. Chapla interview, Aug 80; Wall interview, Aug 80; Telex, Ramon P&S to NEPO P&S, 25 Sep 80, sub: MOD Interference in ABC Procurement, IABPC, 33/3; Ltr, Taylor to Butler, 29 Sep 80, sub: Authorized Direction from the Contracting Officer, IABPC, 33/3.

40. Telex, Kedom, MOD PMO Economic Unit, to NEPO P&S and AFRCE-Ramon [c. 15 May 80], sub: RFQ No. 54030E09; Telex, Moshe Goldsmidt, MOD PMO Economic Unit, to NEPO P&S and AFRCE-Ramon, 9 Jun 80, sub: Water Storage Tank, IABPC, 33/1; MFR, Hartung and Bar-Tov, 2 Apr 80, sub: DOD/MOD PMs Meeting, 27 Mar. 1980, IABPC, 45/4; N. Steinberg interview.

41. MFR, Bar-Tov and Hartung, 30 Jun 80, sub: DOD/MOD PMs Meeting of 26 June 1980, IABPC, 45/4; Wall, Briefing for Incoming Officers, 14 Jun 81; Procurement Guidance 2, 10 Jun 80, sub: MOD Assistance to Prime Contractors, IABPC, 8/7; Noah interview.

42. Hartung interview, Apr 81; Chapla interview, Aug 80; Damico interview, Aug 80.

43. Wall interview, May 81; Maloney interview, May 81.

44. Thomas interview, Aug 80; Wall, "Israeli Air Base Project," p. 329; ABC Weekly Sitreps, 26 Feb, 18 Mar, and 27 May 80, IABPC, 13/17, 14/1, and 14/5.

45. John B. Tieder, Jr., and Robert K. Cox, "Construction Management and the Specialty Trade (Prime) Contractors," *Law and Contemporary Problems* 46 (Winter 1983): 45; Interv, author with Richard Huggins, May 81, Ovda, Israel.

46. MFR, Hartung and Bar-Tov, 2 Apr 80, sub: DOD/MOD PMs Meeting of 27 Mar. 1980; SOP 14, Configuration Management.

47. [Wall], General Lewis Fallout Requirements, 28 Sep 80, IABPC, 40/9; Wall, Project Notebooks, vol. III, 24 Sep 80, IABPC, 90; Damico interview, May 81.

48. MFR, Bar-Tov and Hartung, 24 Aug 80, sub: PMs Meeting of 21 Aug. 1980, IABPC, 45/4; Thomas interview, Aug 80.

49. Memo, Blake, 22 Aug 80, sub: Meeting with BG Wall and Carl Damico—20 and 21 Aug, in OAO, Master Diary, vol. III, IABPC, 84/2; Ltr, Wall to Area Engineers, 2 Sep 80, sub: Impact of ECPs, IABPC, 23/3.

50. Ltr, Bar-Tov to Hartung, 25 Aug 80, sub: Design Changes; Memo, Thomas for DOD PM, 8 Sep 80, sub: Design Changes; Memo, Wall for DOD PM, 24 Sep 80, sub: ECPs. All in IABPC, 23/3.

51. Wall, Project Notebooks, vol. III, 12 Oct 80, and vol. IV, 22 Nov 80, IABPC, 90.

52. Wall, Project Notebooks, vol. III, 27 Oct 80, and vol. IV, 22 Nov 80, IABPC, 90.

53. Wall, Project Notebooks, vol. III, 31 Oct 80, IABPC, 90.

54. MFR, Wharry, 17 Dec 80, sub: Trip Report—Israel Air Bases Construction Project.

55. Hartung interview, Apr 81; Damico interview, Oct 81; Graw interview, Oct 81; Parkes interview, May 81; Thomas interview, Aug 80.